CLAIMS

I claim:

1. A programmable telecommunications switching system comprising:

a computer including a main bus, at least one backplane, microprocessor carried on said main bus for processing communication functions and controlling transferring data;

a plurality of expansion cards coupled to said main bus, wherein each expansion card includes a digital signal processor for preprocessing waveform data for maximizing the transfer of said waveform data, said expansion cards are selectable T1/E1 telephony cards; and

said main bus being a peripheral component interconnect bus;

wherein said at least one backplane is chosen from the group consisting essentially of a computer telephony bus, a cell or ATM or CT bus, and a computer telephony and cell combined bus.

2. The programmable telecommunications switching system according to claim 1, each of said selectable T1/E1 telephony cards provides a maximum of 30 voice channels.

3. The programmable telecommunications switching system according to claim 2, each of said selectable T1/E1 telephony cards provides at least a minimum of 24 voice channels.

4. The programmable telecommunications switching system according to claim 3, each of said selectable T1/E1 telephony cards producing a single digital voice/data stream in the range of 1.544 to 2.048 Mbps, carried over standard pairs of copper wire.

5. The programmable telecommunications switching system according to claim 1, said computer further including memory, wherein said memory is chosen from the group consisting essentially of FLASH ROM and DRAM.

6. The programmable telecommunications switching system according to claim 5, said microprocessor includes a reduced instruction set computer.

7. The programmable telecommunications switching system according to claim 1, wherein said system acts as a virtual matrix.

8. The programmable telecommunications switching system according to claim 1, wherein said matrix is capable of accepting any input protocol.

9. The programmable telecommunications switching system according to claim 1, wherein said matrix is capable of outputting any protocol.

10. The programmable telecommunications switching system according to claim 1, wherein said matrix is capable translating any of said input protocol to any of said other output protocol.

11. The programmable telecommunications switching system according to claim 1, wherein said translation is enabled through the use of an internal ATM or cell Bus.

12. The programmable telecommunications switching system according to claim 1, wherein said backplane can pass commands or states or calls.

13. The programmable telecommunications switching system according to claim 1, wherein said matrix is capable of handling at least as many as 3360 input and output ports.

14. The programmable telecommunications switching system according to claim 7, wherein said matrix has only software switches.

15. The programmable telecommunications switching system according to claim 14, wherein said matrix processes all switching functions in RAM.

16. The programmable telecommunications switching system according to claim 1, wherein said matrix is programable;

17. The programmable telecommunications switching system according to claim 15, wherein said matrix may be accessed remotely.

18. The programmable telecommunications switching system according to claim 1, wherein said matrix is monitored by a billing system.

19. The programmable telecommunications switching system according to claim 17, wherein said billing system works in real time.

20. The programmable telecommunications switching system according to claim 1, wherein said matrix is monitored by a diagnostics system;

21. The programmable telecommunications switching system according to claim 1, wherein said diagnostics system works in real time.